

## COVID-19 pandemic: from respect for science to investments in National Health Services

Pandemia pela COVID-19: do respeito pela ciência ao investimento nos Serviços Nacionais de Saúde

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January 2020. The world has woken up to a worrying reality. The city of Wuhan, capital of the province of Hubei, China, was struggling with a new virus with enormous transmission capacity. COVID-19 is a severe respiratory disease caused by the Severe Acute Respiratory Syndrome virus (SARS-CoV-2), first identified in December 2019 in Wuhan<sup>(1)</sup>. Given the potential seriousness of the situation caused by a virus, about which very little was known, on January 30, 2020 the World Health Organization (WHO) declared a COVID-19 epidemic as a serious international public health problem. In March 2020, Chinese health authorities estimated that the number of people infected would be 80,174, with a total of 2,915 deaths<sup>(2)</sup>.

In fact, what most alerted the world was the spread of the virus in northern Italy. Not prepared to face a little-known virus, health professionals treated the first cases without great precautions and asymptomatic people have spread the virus, mainly in large clusters. The huge number of infected people who already had severe respiratory symptoms such as dyspnea or pneumonia quickly exhausted the beds available in hospitals and intensive care units. Many health professionals died at that time. Given the free movement of people and goods, the virus has spread throughout the world, with worrying incidence rates in several countries.

The situation deteriorated until the end of the first semester of the year, at least in the northern hemisphere. Two conclusions could be drawn from the analysis of the progression of the pandemic as follows: no country had its health services prepared for such a situation; however, in countries with better-organized national public health services, it was easier to implement complementary measures such as diagnostic tests, epidemiological screenings, and strategies for breaking the chains of infection. Countries that had quality community backup services were better able to cope with the pandemic.

No clinical picture has given rise to so many studies and evidence in such a short period of time. The different individual responses to infection and the lack of specific therapeutic regimens explained this investment, but despite all this effort, little is known about SARS-CoV-2. However, more is known today about this virus, alternative medications have been identified that (at least) decrease mortality, especially in intensive care units. In the mildest cases, the use of common drugs proved to be effective. In the most complex cases, remdesivir (used to deal with the middle east respiratory syndrome - MERS-CoV), interferon, and dexamethasone have been identified as effective despite the WHO only recognizing the therapeutic interest of the latter, as it showed that it could reduce mortality among ventilated patients by one third.

However, the various agents have not always been successful in combating the pandemic. First, because many health systems were not prepared to face a small increase in the demand for healthcare - structures, human resources, and individual protective equipment were lacking. More serious than that, they did not sufficiently emphasize measures that are currently most effective in combating the pandemic - correct use of masks, respiratory etiquette, social distancing, and hand washing. These measures proved to be effective in the first phase of the pandemic.

Some measures have proven to be effective and have taught us a lot about the pandemic. Total confine-

ment, the closure of on-site training in schools, measures at the level of catering and, above all, teleworking are examples of this. After the first outbreak, research has shown that we can implement containment measures without isolating the elderly, who languish with cognitive degradation and lose functional capacity. We learned that when protected with correct measures, schools can remain open and do what guides their existence. Likewise, if hygiene and distance requirements are met, markets, restaurants, and cultural institutions can stay open. In terms of teleworking and distance learning strategies, we found that some are here to stay.

In this second phase of the pandemic, which in many countries is being more dramatic than the first, we are able to perceive worrying situations at the level of societies. Many manifestations on social networks multiply unfounded negative perspectives, which call into question everything that science has already brought to us. Many protesters deny the benefits of social confinement, refuse to wear masks, and insist on meeting in groups without any protection. For health professionals, many of whom lost their lives due to the infection, it is difficult to see how part of a generation that had the best available training is capable of showing such a level of illiteracy and, above all, selfishness.

Until the emergence of an effective vaccine, which allows 70% of the population to be immunized, measures of social distancing, etiquette, and use of masks remain the most effective measures (3), accompanied by a public health backup to mass-test schools and nursing homes, and to break the chains of transmission. Total and prolonged confinement does not seem a good solution because it destroys the economy and employment. On the contrary, temporary regional "lockdown" measures (three weeks) followed by periods of three to four months of partial confinement, with respect to measures of social distancing, etiquette, and mask use, continue to appear more effective, as mathematical models of estimation reveal.

We know that, someday, we will all die, but we

will fight this COVID-19 with determination. Until we have specific therapeutic measures and vaccines, we must stop the spread. Finally, we conclude that in health schools it is necessary to invest in catastrophe medicine, as we all believe that one day SARS-CoV-2 will be less present but other pathogens may appear, just as natural phenomena arise causing suffering in families and societies.

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